

REMARKS

In a non-final Office Action mailed October 19, 2006, the Examiner objected to and rejected the claims for a variety of reasons. Applicants respond to each of the Examiner's objections and rejections below. In view of the amendments noted above and the arguments presented herein, Applicants respectfully request reconsideration of the merits of this application.

Objection to the Claims

Claim 24 is objected to for reciting the phrase, "polymeric molecule at attached." The word, "at," a typographical error, is deleted. In view of this amendment, Applicants respectfully request reconsideration of this rejection as applied to Claim 24.

Rejections Under the Doctrine of Non-Statutory Obviousness-Type Double Patenting

Claims 21 and 23-24 are rejected under the doctrine of non-statutory obviousness-type double patenting in view of two U.S. Patents. The Examiner alleges that Claim 21 is patentably indistinct from Claim 1 of U.S. Patent No. 7,049,074 and that Claims 21 and 23-24 are patentably indistinct from Claims 1 and 10 of U.S. Patent No. 6,509,158.

Applicants cancel Claim 22, not rejected for obviousness-type double patenting, and incorporate the subject matter of cancelled Claim 22 into independent Claim 21, thereby rendering moot the rejections for obviousness type-double patenting. In view of this amendment, Applicants respectfully request reconsideration of these rejections as applied to Claims 21 and 23-24.

Rejections Under 35 U.S.C. § 102(b)

The Examiner rejected Claims 21-22, 24-25 and 27 under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 6,265,153 to Bensimon *et al.* The Examiner alleged that Bensimon *et al.* discloses a method of aligning a macromolecule onto a surface of a support comprising fixing one end onto the surface, although such language does not appear in Applicants' claims. Applicants believe that Bensimon *et al.* does not anticipate the pending claims and respectfully request reconsideration of this rejection as applied to Claims 21, 24-25 and 27. Claim 22 is cancelled, so the rejection is moot as applied to that claim.

Bensimon *et al.* does not disclose every limitation and element as recited in the pending claims. Specifically, MPEP § 2131 provides:

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d

628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (noting that the identical invention must be shown in as complete detail as is contained in the claims) (emphasis added); *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed.Cir. 1989) (noting that the elements must be arranged as required by the claim).

Bensimon *et al.* does not disclose using laminar flow to cause polymeric molecules to adhere to the micro-channel and do not specify a micro-channel having a first wall electrostatically attractive to the polymeric molecules. Citing Example 1, lines 18-55, the Examiner acknowledged that Bensimon *et al.* used two cover slips. Two cover slips have no side constraints, and cannot form a microchannel, which has at least a bottom and sides, as is shown, for example, in Applicants' Figures. The structures formed by a pair of cover slips in Bensimon *et al.* lack sides and cannot be considered microchannels.

More importantly, the fluid dynamics of Bensimon *et al.* are opposite to those of Applicants. Applicants use (and claim) laminar flow at the leading edge of a solution to cause the polymeric molecule to adhere to the micro-channel surface. In contrast, Bensimon *et al.* disclose using capillary action/convection (principally caused by evaporation at the trailing edge of a solution) to create a meniscus that aligns polymeric molecules attached to a surface. See FIG. 6 of Bensimon *et al.* and column 2, lines 59-68; column 17, lines 41-45; and column 19, lines 30-32. Bensimon *et al.* teach away from using laminar flow by expressly noting that the flow types used by Applicants are not as efficient as a meniscus. See column 4, lines 7-20. Paragraph [0050] of the application contrasts the differences between laminar and capillary flow/convection.

Applicants' laminar flow method has an advantage over capillary action/convection, in that it permits simultaneous attachment and alignment of polymeric molecules. See paragraph [0029] of the application. In contrast, Bensimon *et al.* discloses that they first "anchored [the macromolecule] on the surface and then uniformly aligned [it] by the passage of the meniscus." See column 4, line 7 to column 5, line 17.

Rejections Under 35 U.S.C. § 103(a)

Claim 23 is rejected under 35 U.S.C. § 103(a) as being obvious over Bensimon *et al.* The Examiner alleges that Bensimon *et al.* disclose a method of using a restriction enzyme prior to fixing and elongating a polymeric molecule such that one skilled in the art would have found it obvious to reverse the order of the method steps. Applicants respectfully disagree.

As noted above, Bensimon *et al.* fails to disclose, teach or suggest micro-channels and teaches away from laminar flow methods. Applicants reiterate their previous remarks and point out that Bensimon *et al.* cannot render Claim 23 obvious, since the elements of its independent Claim 21 are neither anticipated by, nor obvious in view of, Bensimon *et al.* Moreover, it makes no sense to reverse the steps as proposed. Applicants' method permits one skilled in the art to evaluate a fixed and cleaved polymeric molecule. If the polymeric molecule were cleaved with a restriction enzyme before being fixed and elongated, the resulting cleavage products would be randomly ordered in the carrier liquid in the staging reservoir and meaningful data about the polymeric molecules could not be obtained. As such, the reversal proposed would defeat the purpose of Applicants' method. See FIG. 11 and paragraphs [0005], [0009], [0017], [0021] and [0071] of the above-identified application. In view of these remarks, Applicants respectfully request reconsideration of this rejection as applied to Claim 23.

Claim 26 is rejected under 35 U.S.C. § 103(a) as being obvious over Bensimon *et al.* in view of Kaiser D, *et al.*, "Spermine protection of coliphage lambda DNA against breakage by hydrodynamic shear," J. Mol. Biol. 6:141-147 (1963). The Examiner acknowledges that Bensimon *et al.* fail to teach, motivate or suggest to one skilled in the art to use a condensation agent to collapse polymeric molecules into shear-resistant balls, but asserts that after reading Kaiser *et al.* one skilled in the art would find it obvious to do so. Applicants respectfully disagree.

Applicants reiterate their comments, *supra*, as to the relationship between independent claim 26 and Bensimon *et al.*, maintaining that the differences between the two are greater than posited by the Examiner.

Further, no motivation is found to combine the two documents. The Examiner has inappropriately used hindsight and Applicants' teachings to reject Claim 26. While the Examiner has cited a secondary document that shows a condensation agent, such an agent would have been irrelevant in the method of Bensimon *et al.* because, as noted and in contrast to Applicants, Bensimon *et al.* do not use laminar flow to align polymeric molecules. Accordingly, the skilled person practicing Bensimon *et al.* would have no need for the condensation agent of Kaiser *et al.*

Still further, Bensimon *et al.* was filed February 10, 1995, whereas Kaiser *et al.* was published February 6, 1963. Over thirty (30) years passed between these two dates. While

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Applicants are mindful that the obviousness rejection is linked to the filing date of the above-identified application, the Examiner has provided no evidence to show that a change in the knowledge of one skilled in the art occurred between 1995 (Bensimon's filing year) and 2002 (Applicants' filing year). If indeed the skilled person would have found it obvious to combine Bensimon *et al.* with Kaiser *et al.*, then Bensimon *et al.* might have at least contemplated doing so but did not because the capillary action methods, described *supra*, did not warrant such an approach.

In view of these remarks, Applicants respectfully request reconsideration of this rejection as applied to Claim 26.

Additional Remarks

In view of the amendment to Claim 21, Applicants amend Claims 23 and 24 to correct the name of the step recited in these claims (i.e. step (c) is now (d)). Likewise, Applicants amend the word, "restricting," in Claim 23 to "restriction." Support for this amendment is located in paragraph [0069] of the specification.

Fees

A petition for a three-month extension of time accompanies this response so that it will be deemed to have been timely filed. No other extension of time is believed due, but should any additional extension be due, in this or any subsequent response, please consider this to be a petition for the appropriate extension and a request to charge the extension fee to Deposit Account No. 17-0055.

No additional fees are believed due; however, if any fees are due, in this or any subsequent response, please charge Deposit Account 17-0055.

Respectfully submitted,



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